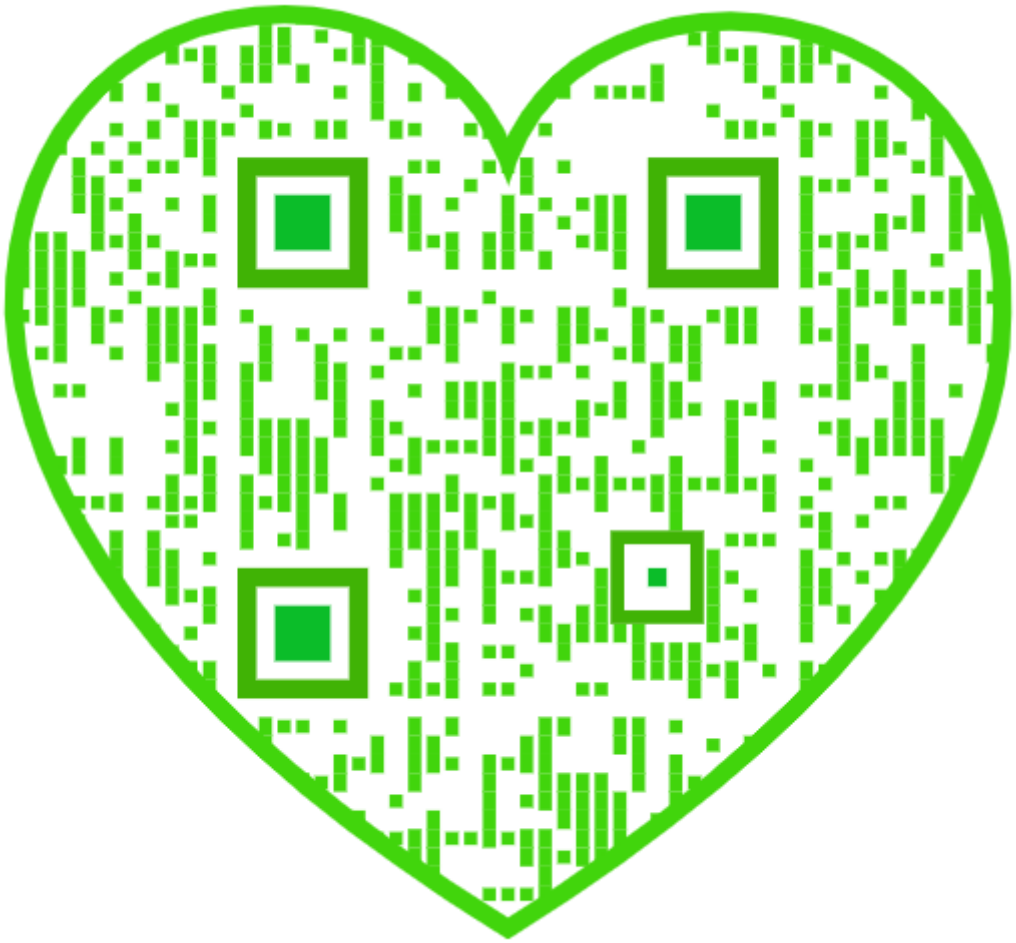

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JACKSONVILLE REAL ESTATE BOARD
SPECIAL COMMITTEE ON WAREHOUSES FOR SWEET POTATOES
AND THE MANUFACTURE OF BY-PRODUCTS
C. LYMAN SPENCER, Chairman
P. J. D. LARMOYEUX H. H. SIMMONS

INDUSTRIAL BULLETIN NO. 1, MAY 9, 1917

THE CURING AND WAREHOUSING OF

The Southern Sweet Potato and Yam

MARKETING, AND THE MANUFACTURING OF CULLS AND SURPLUS INTO BY-PRODUCTS

A PERISHABLE FOOD-CROP TURNED INTO A STAPLE PRODUCT WHICH WILL KEEP FOR MONTHS AND SHIP LONG DISTANCES

"Improvement of storage methods, with suitable varieties and adequate transportation should put the sweet potato on quite as stable a basis as the Irish potato crop of the North."
Report 98, U. S. Bureau of Markets, page 16½.

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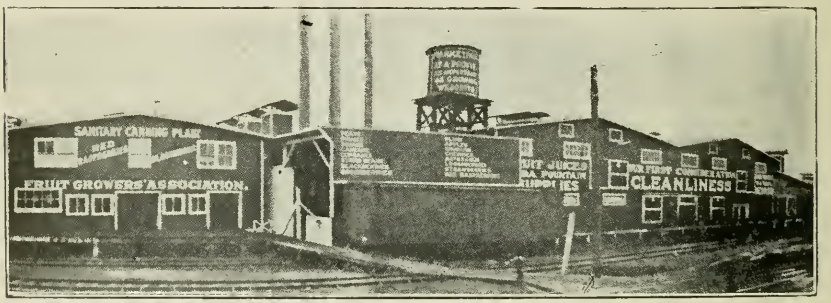
"The farmer is himself a manufacturer".

"This country has innumerable examples of success in manufacturing, but where can be found one in which all the thought is given to production, and no attention is given to the distribution and selling of the products?"

When we observe the farmer, failing—for want of warehouses—to "store his crops until the markets are ready to use them"; placing his products upon the market uncured, ungraded and not standardized for trade channels; raising those products in quantities which should supply a Nation, and which he attempts to sell through local markets in less than carload lots; "the conclusion is formed that his marketing methods are not worthy of the name, as they consist chiefly in dumping, rather than marketing."

"The average grower is not competent to grade and inspect his own products, and, even if he were, he does not produce enough to create a reputation beyond the limits of his own private trade."

U. S. Department of Agriculture, Year Book 1914, pages 186 and 187.



PARTIAL VIEW OF ONE OF TWO STRICTLY CO-OPERATIVE CANNING PLANTS IN THE PACIFIC NORTHWEST, DEVELOPED BY A CO-OPERATIVE MARKETING ASSOCIATION TO CARE FOR ITS SURPLUS FRUIT AND PRODUCE

Incorporated in 1902 with a capital stock of $2,000, it has accumulated a net surplus of $100,000., its total assets exceed $340,000., and its business in 1914 was in excess of $1,300,000.: its success is due to most efficient management, and the extent of the business. It has developed an ideal combination, in that fresh products are marketed, and surpluses taken care of in the canning plants.

The basic principle of all marketing associations and surplus-utilization-plants (co-operative or otherwise) is a profit to the producing farmer. Provide that profit permanently and his support and co-operation always follows.

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What one Florida Warehouse Accomplished in Nine Months

Handled nearly a hundred thousand dollars worth of business.

Graded Florida corn and made it equal to the best Western, acceptable on any grain exchange or at any port.

Brought Florida black-eye peas up to the California standard and made a grocery market for them.

Put Florida peanuts on the market in carlots.

Established grades in Florida hay.

Made general crops as staple as cotton in the cash market and enabled the growers to grow something for sale every month in the year.

Made it possible for consumers to get Florida products in standard form guaranteed, at reasonable prices, and demonstrated that they were often better than imported products of the same kind.

Gave farmers a place to store their produce and borrow cash on it when they wished to hold for higher prices.

Introduced two valuable Southern concentrates for feeding live stock—peanut meal and velvet bean meal, saving the money formerly spent for Western bran.

Used the Federal Reserve Bank to give Farmers six per cent. interest for the first time in the history of Florida.

Started true productive agriculture in a county that was living on disappearing industries such as turpentine, lumber and phosphate.

Won the commendation of the Federal Reserve at Atlanta and set a market example for the whole State and the South.

The above is from an excellent article by James H. Collins in the Country Gentleman, May 12, 1917. It is well worth reading.

What the Jacksonville Warehouse and Manufacturing Plant will Accomplish

It will make the Southern grown sweet potato as staple as the Irish potato of the North, by curing it properly and standardizing for produce trade channels.

It will make Jacksonville known throughout the U. S. as the greatest sweet potato market.

Confining its business to the vegetable food products, it will not only accomplish the things mentioned above by Mr. Collins, but will manufacture the culls and surplus of sweet potatoes and other crops into various by-products, including canning and drying.

It will put a value on every Duval County farm, based on its net annual income.

Note:—*Mr. Collins has examined the greater part of the following data, and thinks so well of it that he will have an article on the subject in the Country Gentleman during the month of June.*

THE CURING AND WAREHOUSING OF

THE SOUTHERN SWEET POTATO AND YAM

AND THE MANUFACTURE OF THE CULLS AND SURPLUS
INTO BY-PRODUCTS

INTRODUCTION

With an admitted necessity for a cash crop in Duval County, an investigation was made as to the best food-crop for that purpose. In investigating the possibilities of curing and warehousing the sweet potato and manufacturing the culls and surplus into one or more of the seven by-products of the sweet potato, this committee became thoroughly impressed with the wonderful results which will come from the establishment of this new industry in Jacksonville, not only as regards the sweet potato, but also as to other vegetables. This committee considered it a duty, which it owed not only to the city and county, but because of unusual conditions, to our country, to publish the results of its investigations.

We trust the bulletin will receive your careful consideration.

C. LYMAN SPENCER,
P. J. D. LARMOYEUX,
H. H. SIMMONS,
Special Committee of the
Jacksonville Real Estate Board.

The Sweet Potato as a Money Crop

The sweet potato was selected as the most suitable staple money crop for the following reasons:

1. Every native of Florida, be he white or black, knows how to grow it.
2. It is unusually free from insect enemies and plant diseases.
3. Its production per acre is enormous.
4. It can be raised with comparatively little hand labor.
5. It has a greater food value than the Irish potato.
6. "As a food for the great mass of the people living in the warmer portions of our country, the use of this crop is exceeded only by hominy and rice."—it is the staple food of the poor and rich alike.
   U. S. Bulletin 520, page 5.
7. Its value is increasing rapidly; the increase in acreage for the past ten years being 25 per cent., while the increase in value was 78.3 per cent. and "with better methods of storing and marketing their value could be doubled without increasing the acreage or production."—
   U. S. Bulletin 548, page 3.
8. Even now "The sweet potato is the second most important truck in the U. S., being exceeded only by the Irish potato."
   U. S. Agricultural Department.

Improper Handling Causes Great Annual Loss

Investigation showed, however, that the sweet potato is now handled just as it has been handled for more than three centuries, in the Azores, the West Indies and the South—A large crop is annually produced, 75 per cent. of it is placed in make-shift, out-door earth-banks, and more than one-half of the amount so stored is lost by decay—an estimated annual loss of 37½ per cent of the total Southern crop.

"Very few of the sweet potatoes stored in pits or banks ever reach the market, for from 25 to 50 per cent. spoil, and those that remain are not of good quality. Out door pits and banks cannot be depended on. Some years a very small number of the potatoes spoil in banks, while in other years practically the whole crop is lost."

U. S. Bulletin 548, page 3.

Loss Amounts to Over $10,000,000 *Annually*

The eight Southern States, south of Virginia, on the coasts of Atlantic or Gulf, produce four-fifths of all the sweet potatoes and yams raised in the U. S. The annual loss by decay in those States from improper outdoor storage methods amounts to over $10,000,000 a year.

U. S. Agr. Dept. Press Bull., May 9, 1917.

In Florida alone, it is estimated that over 800,000 bushels are permitted to decay, in this way, each year; and in that part of Georgia and Florida within a reasonable shipping distance of Jacksonville, more than 300,000 bushels rot in out-door earth-banks annually.

Must Be Properly Cured and Stored in Warehouses

Specially constructed warehouses for curing and storing the Southern sweet potato and yam practically eliminates that loss. This is not a theory, but an accomplished fact. Such warehouses have been in use for years in various parts of the country. They have not only been a success financially, but the U. S. Agricultural Department states that it has a record of 230,000 bushels thus stored for a period of 124 days with a loss of only 2.45 per cent. and that refers to a collection of widely scattered storage houses operated by different men under varying conditions. A properly managed warehouse of large capacity should have a loss of less than 1 per cent.

The dry sweet potato raised in the North Atlantic Coast trucking regions from Virginia to New Jersey—a potato which the South does not like—is sold right in Jacksonville from September until May, every year at from 25 cents to 50 cents more a bushel than the farmer is asking for his product—those imported sweet potatoes are properly cured, ship long distances and keep well.

SWEET POTATOES AND YAMS GROWN IN THE SOUTH ATLANTIC COAST AND GULF STATES FOR THE YEAR 1914

Also showing loss by decay for want of proper warehousing, etc.

1	2	3	4	5	6	7
State	Total Acres Planted	Total Yield in Bushels	Farm Value of Crop Harvested	Estimated Bushels Stored in Outdoor Earth-banks	Estimated Bushels Lost By Decay For Want of Proper Warehouses 37½%	Estimated Value of Loss by Decay for Want of Proper Warehouses
Florida	19,000	2,280,000	$1,824,000	1,710,000	855,000	$ 684,000
Georgia	79,000	6,715,000	4,633,000	5,034,000	2,517,000	1,737,000
S. C.	28,000	4,080,000	2,856,000	3,060,000	1,530,000	1,071,000
N. C.	76,000	6,840,000	4,446,000	5,130,000	2,565,000	1,667,000
Alabama	63,000	5,859,000	3,808,000	4,392,000	2,196,000	1,428,000
Miss.	50,000	4,500,000	2,835,000	3,375,000	1,687,000	1,063,000
La.	59,000	5,133,000	3,283,000	3,852,000	1,926,000	1,231,000
Texas	52,000	5,252,000	4,569,000	3,939,000	1,969,000	1,713,000
Total	426,000 acres					

Total yield.....40,659,000 bushels
Total farm value of crop.....$28,256,000
Total estimated bushels stored in out-door earth-banks 30,492,000
Total estimated bushels lost by decay for want of proper warehouses in which to cure and store the crop 15,245,000
Total estimated loss in dollars, for want of proper warehouses.....$10,594,000

Total production for U. S. in 1914.....56,000,000 bushels
Total production for U. S. in 1915.....74,000,000 bushels
Total production for U. S. in 1916.....67,000,000 bushels
The eight States named produced four-fifths of the entire crop.
Estimated percentage of loss by decay in eight States named is 37½%.
Columns 1 to 4 taken from U. S. Year Book, 1914, page 565.
Columns 5 to 7, Estimated by C. Lyman Spencer, April 1, 1917.
On May 9, 1917, the U. S. Department of Agriculture estimated the loss in column 6 at "over 30%"

Warehouses for Curing and Storing

The warehouse may be of frame construction, sheathed on the inside with building paper and board ceiling, nailed to the studs. A temperature from 80° to 85° is maintained for ten days to two weeks, for the purpose of curing the sweet potatoes and yams. After curing, an average temperature of 55° should be maintained; it should not rise above 60° nor go below 45°. Ventilators are provided in the roof, through which the moisture is carried off, and through which the temperature is kept at 55° after the curing period has passed.

That is a type of building which should be built on every farm, for the purpose of storing the sweet potatoes needed by the farmer for food and stock feed. Properly handled such a warehouse can store sweet potatoes with a loss of less than 3%, and their construction is described fully in Farmers Bulletins No. 520 and 548.

A large central warehouse located at Jacksonville is the only practical solution for curing, warehousing, grading and selling the *surplus* sweet potatoes and yams. See page 13 of this bulletin.

Sweet Potato Warehouses a Practical Business Proposition

Prof. P. H. Rolfs, Director of the Florida Experiment Station, says:—"A sweet potato storage warehouse such as you suggest is an entirely practical proposition. It is merely an enlarged form of what has already been established in scores of places. Jacksonville really ought to have had such a warehouse for sweet potatoes long ago. The annual loss from sweet potatoes, stored under such conditions, will be largely eliminated." (April 27, 1917.)

The U. S. Department of Agriculture referring to reports on a number of small warehouses, shows that a total of 230,000 bushels stored in those warehouses for a period of 124 days, there was a loss of but 2.45%. Those small warehouses were scattered at different stations, in several states, each managed by a different man, making it impossible to have uniform conditions. It should be clear that in a large, properly constructed warehouse, the temperature and ventilation would be more uniform, and a competent force being in attendance at all times, the loss would be much less than the 2.45% mentioned by the U. S. Department of Agriculture, and in fact, as Prof. Rolfs says, will be "largely eliminated."

The U. S. Department of Agriculture, in co-operation with the Experiment Stations of Alabama and Mississippi, operated warehouses for the curing and storing of sweet potatoes for several years in those two States and wonderful results were obtained.

Warehouses of as much as 60,000 bushels capacity have been constructed for curing sweet potatoes and yams, and have been operated with financial success, by local companies or merchants.

Sweet potato warehouses for curing and storing have been successfully used for years in New Jersey, Delaware, Maryland, Virginia, Alabama, Mississippi, Arkansas, and throughout the Texas sweet potato region.

Mr. C. B. McRae, of Baldwin, Florida, has tried this method out in a small way, and found he could keep sweet potatoes raised in that section until the following May.

Mr. Julius F. Zetzsche, of Jacksonville, who is familiar with the sweet potato section of Southern Illinois, says that when he was living in that section, the farmers successfully kept their sweet potatoes for months by methods similar to those now approved by the U. S. Department of Agriculture.

In many parts of the country cured sweet potatoes are known to the Trade as "kiln-dried" sweet potatoes.

A produce man in the great anthracite coal region of Scranton, Wilkesbarre, etc., Pennsylvania—a territory containing a population of about 1,500,000 who has been in business there for twenty years, says: That in the early days, he had as much as 30 cars of sweet potatoes from Southern New Jersey decay on the side-track before they could be disposed of and unloaded, but that since that time, when the producers of New Jersey and Northern Virginia sold what is known to that trade as the "kiln-dried sweets," they handled them as late as May, without material loss.

"The only safe and practical method of storing sweet potatoes is in a storage house."

U. S. Bulletin 548, page 3.

BY-PRODUCTS

"Under the very best cultural methods, there is always a percentage of the crop that will not grade sufficiently high to justify shipment. The preservation of dropped and cull fruits has got to be an industry within itself."

U. S. Year Book, 1914, page 198.

Sweet potatoes shipped to Jacksonville in field boxes, hampers or in bulk, to be cured and then stored in warehouses of sufficient capacity to meet the requirements of the producing territory within a reasonable shipping distance of Jacksonville, would result in the accumulation of a large quantity of culls.

These culls can now be profitably manufactured into seven different by-products. They may be canned or dried, like dried apples; they may be ground into flour, or dessicated, or they may be converted into denatured alcohol, starch or commercial stock feed, and a large amount of sugars is also available.

When the crop is first dug, large quantities are rushed to markets by the farmers, resulting in a depression of prices, and at such times the supply needed for manufacturing can be augmented by purchase in the open market.

The surplus of other Florida crops can be shipped to Jacksonville in bulk or in field crates after the profitable shipping season is passed, and thus the manufacturing plant kept busy the greater part of the year, and the farmer will receive some income for vegetables that now rot in the fields.

Canned Sweet Potatoes

In 1914, there were marketed 369,000 cases or about 9,000,000 No. 3 cans of canned sweet potatoes. One bushel of sweet potatoes is sufficient for 15 No. 3 cans.

Last year at Cheraw, S. C., a canning factory was established for the purpose of canning sweet potatoes and yams; it has a capacity of 400 cases, or 9,600 No. 3 cans per day; its profits were such that it expects to double its capacity this year.

Sweet potatoes being canned after most of the fruits and vegetables have passed out of season, and the canning season thus lengthened.

Contracts can now be made with large dealers, at remunerative prices for every can which can be produced this year.

Dried Sweet Potatoes

"Uncooked sweet potatoes may be sliced, and then dried, either in the sun, or in evaporators. Their preparation is described as follows:"

"Cleanly washed potatoes are placed in a suitable basket and immersed in boiling water for a short time; when taken out of the basket, they are cut into thin slices and spread over mats and exposed to the sun for two or three days. In order to make a superior quality, the skin of the potato is peeled off before slicing." "They are prepared for the table by soaking and baking. Dried sweet potatoes were exhibited among the products of Japan at the Columbian Exposition."

U. S. Bulletin 26, page 25.

Dried sweet potatoes thus prepared are one of the commercial food products of Japan. Sweet potatoes and yams, prepared in this way should be as common as dried apples in our markets.

Recently the methods of drying, or "dehydrating" has been perfected, so that the cell structure is retained, together with the full garden flavor of the fresh vegetable. Sweet potatoes prepared in this way contain less than 10% of moisture—less than one-seventh of their original weight. Drying establishments of this kind are now in operation in Middle River, California; Webster, New York, and Bound Brook, New Jersey.

Popular Science Monthly, pages 698-701.

In recent lectures, Dr. Lund, an expert from the U. S. Department of Agriculture, demonstrated the process of drying in Jacksonville and other points. He stated that the dried product could be pressed into loaves and wrapped in waxed paper, with an outer layer of tinfoil as a protection against the atmosphere. Sweet potatoes prepared in this way should find a ready market in all parts of the country as pie-fillers, and for sweet potato pies.

By the new method, less heat is used than in the old method of evaporation, and there is a greater circulation of air. The Board of Trade, at Ogden, Utah, secured the location of a large drying establishment at that point, which has successfully dried potatoes and vegetables for shipment to the Northwest, and has made good money.

Mr. Gore, of the U. S. Department of Agriculture, has completed successful experiments in drying potatoes, and his report should be published soon.

The Department has conducted a successful drying plant at Arlington Farms, which we hope to know about soon. The plant was used for drying Irish potatoes, but it should have an important bearing on sweet potatoes as well.

Dried sweet potatoes would make excellent ship supplies.

Sweet Potato Flour and Dessicated Sweet Potatoes

"There is doubtless a great field * * * for the production and sale of dessicated sweet potatoes and sweet potato flour * * * especially for ship supplies."

U. S. Bulletin 324, page 38.

Sweet potato flour mixed with wheat flours produces exceptionally fine pastries and cakes. A flour made from the Irish potato, mixed with wheat flour is used in making the German "war-bread," but it has less nutriment, less sugar, and the taste does not compare with the flour from the sweet potato, which is attractive.

A factory at Miami has sold its entire output for a year to one concern. They make the flour from arrow-root, which grows wild there. Sweet potato flour is more salable.

Denatured Alcohol

"It is possible that the sweet potato will become one of the chief sources of alcohol in the United States."

U. S. Bulletin 324, page 39.

Dr. H. W. Wiley says: "The sweet potato has not been used in the United States for making of alcohol. In the Azores, great quantities of sweet potatos are grown for this purpose, and make an alcohol of fine quality. There are large areas in the United States, especially in the Southern States, where the sweet potato can be grown in great abundance. The experiments at the South Carolina Station show that as high as 11,000 pounds of sweet potatoes can be grown per acre. In addition to starch, the sweet potato contains notable quantities of sugar, sometimes as high as six per cent. being present, so that the total fermentable matter in the sweet potato may be reckoned at the minimum of 25 per cent. A bushel of sweet potatoes weight 55 pounds, and one-quarter of this is fermentable matter, or nearly 14 pounds. This would yield, approximately 7 pounds, or a little over 1 gallon of 95% alcohol. It may be fairly stated, therefore, in a general way, that, a bushel of sweet potatoes will yield one gallon of industrial alcohol."

U. S. Bulletin 268, pages 30 and 31.

In most of the eight Southern States referred to herein, the manufacture and sale of alcoholic liquors has been prohibited by law, and large numbers of distilleries and brewers are idle. Such plants could be utilized for the manufacture of denatured alcohol and other by-products of the sweet potato.

The cereals from which alcohol is now produced being high in price and for the next few years, at least, being needed for food consumption, it is probable that their use for distillation will be prohibited by law. Under these circumstances the sweet potato would become a main source of supply, and it might me found that the cost of production was sufficiently low to permit its use in internal combustion engines in automobiles, trucks, motor boats, aeroplanes, etc.

Starch

In Maine, especially throughout the Aroostook potato regions, the cull, damaged and lower grades of Irish potatoes are converted into starch in local starch factories. The average starch-content of the Maine Irish potato is 18.29 per cent.

Maine Agr. Expt. Sta. Bulletin 57, page 147.

Dr. H. W. Wiley says, of the sweet potato: "The percentage of starch is markedly greater than in the white or Irish potato. In all cases over 20 per cent. of starch was obtained in the South Carolina sweet potatoes, and in one instance over 24 per cent. As high as 2,600 pounds of starch were produced per acre."

The yield of 2,600 pounds of starch per acre, referred to by Dr. Wiley was based on a yield of 11,000 pounds per acre, but under proper methods of cultivation, it is possible to produce in Florida yields as high as 25,000 pounds of sweet potatoes per acre.

The apparatus for the manufacture of starch could also be used in obtaining starch from cull Irish potatoes, from the cassava root, and from the dasheen or taro.

A starch factory was established at DeLand, Fla., some years ago, but was discontinued for the reason that it relied entirely upon the

cassava root, which was produced in insufficient quantities. It manufactured a high grade of starch, tapioca, etc., which sold readily. It could not supply the local demand.

Commercial Stock Feed

The U. S. Secretary of Agriculture says: "The value of sweet potatoes as feed for live stock is not yet generally understood. Three to four bushels are the equivalent of a bushel of corn for hogs, and in connection with rich concentrates, the potatoes are a good feed for cattle. It is not unlikely that by artificial drying a product may be obtained which will keep as long as is desired, and because of its reduced bulk may be shipped long distances at a comparatively low cost."

U. S. Dept. Ag. Press Bulletin, May 9, 1917.

"Three bushels of sweet potatoes are nearly equal to one bushel of corn in feed value;" the former contains 4.5 pounds of protein, while the latter contains 10.5 pounds. One-half pound of cotton-seed meal, or one pound of soy peas for each ten pounds of sweet potatoes, supplies the deficiency in protein.

Cotton-seed meal is produced in Jacksonville, and ground velvet beans and cow-peas are manufactured at Gainesville, Fla., and other nearby points. Ground soy beans are also valuable.

For manufacture into commercial feed the sweet potato would be thoroughly dried, ground and mixed with the other ground feeds mentioned.

It should be remembered that the air-dry sweet potato contains 32.74 per cent. of sugar, and the undried sweet potato after 40 days storage contains 11.07 per cent. of sugar, practically the same amount of sugar as the sugar beet, before extracting the sugar.

While no experiments have been conducted along this line, yet it has been found that sweet potato flour keeps well, and there is no reason why the dried ground product should not keep as well mixed with other feed stuffs as beet pulp and other sweet feeds.

Florida annually imports large quantities of sugar-beet pulp and sweet feeds, and because of the high cost of same, milk sells in Jacksonville as high as 18 cents per quart. A commercial stock feed of this kind should find a ready sale right in Jacksonville and nearby points.

Every dollar's worth of sweet potato stock feed, properly prepared that could be produced the first two years can be sold direct to local minimum of 25 per cent. A bushel of sweet potatoes weighs 55 that could be produced the first two years can be sold to local dairymen and other large consumers through the usual trade channels.

The Sugars

The North Carolina Experiment Station, reports the percentage of sugars in six varieties of Southern sweet potatoes and yams, as follows:

New sweet potatoes and yams..... 5.79 per cent.
Stored sweet potatoes and yams.....11.07 per cent.
Air-dried sweet potatoes and yams.....32.74 per cent.

The above is quoted with approval, by Dr. H. W. Wiley, in Bulletin 268, page 31, and as a basis of comparison, he says that sugar

beets in France contain 11.33 per cent. of sugar, as compared with 11.07 per cent. in the stored sweet potato and yam. In our Western States, however, the average sugar content of the sugar beet is about 14 per cent., with percentages less than 12 per cent and as high in rare cases as 24 per cent.

There seems to have been little investigation into the utilization of the sugars contained in the sweet potato, but if it should be ascertained, that these sugars, (possibly in the form of glucose, to be used with our cane syrups in the manufacture of table syrup, or in some other form) could be profitably recovered, it should mean much to the South, and might give us some of the agricultural wealth which has accrued to the agriculturist in the sugar-beet territory of the West, and possibly more so, for the sweet potato can be produced with much less labor than the sugar beet. And many an acre of Southern land not suitable for sugar cane will grow a good crop of sweet potatoes.

YIELD PER ACRE

The U. S. Agricultural Year Book, for 1914, shows that the eight Southern Coastal States herein named produced on an average 91.12 bushels of sweet potatoes and yams per acre; while Florida produced 120 bushels per acre.

On good Florida lands, with average methods, 11,000 pounds of sweet potatoes are produced per acre; and yields of 25,000 pounds per acre have been produced, at a production cost of $2. per thousand pounds.

As an instance of high yields, the Baton Rouge, La. Experiment Station, in 1893, reported yields of 13 varieties of sweet potatoes and yams, ranging from 28,600 pounds to 58,600 pounds per acre.

Field of Sweet Potatoes at Duval County Stockade Farm—First Crop Planted on this Land. Yield Estimated at 350 to 400 Bushels to Acre. 50 per cent. decayed in Storage, for Lack of Warehouses.

THE SWEET POTATO INDUSTRY IS CONFINED TO LIMITED AREAS

We have seen published statements in the newspapers to the effect that sweet potatoes can be grown in every State in the Union. That statement would be equally true of apples; but no one should go so far as to say that either apples or sweet potatoes can be profitably raised in all those States.

In comparing the sweet potato with the apple crop we find a peculiar situation. In years of large yield of apples, we also have a large yield of sweet potatoes, and the total production of sweet potatoes in bushels is each year almost identical with the total production of apples in barrels. Or to state it differently, find the total number of barrels of apples produced in the United States for any year and you will have the number of bushels of sweet potatoes produced. As a barrel of apples contains about three bushels, the sweet potato crop may be said to be one-third of the apple crop.

Four-fifths of the entire sweet potato crop of the Nation is raised in the eight Southern States herein named; and there are many reasons why this will continue to be true.

In the North the sweet potato is distinctly a market garden, or truck crop, requiring special knowledge and is more costly to plant and produce; it must be stored in more costly storage warehouses, which must be continuously heated. If taken out of the warehouses in very cold weather, and the potatoes become chilled in loading in cars, they will not ship long distances without decay. They are more subject to disease both in the field and on storage than the Southern potatoes; the loss from that source being estimated by the U. S. Agricultural Department to be as high as 40 per cent. in Northern points.

The Northern crop is grown exclusively by one method; they prepare a sweet potato seed bed in what is known as a hot-bed, heated by decaying stable manure, hot air, or steam, and from this seed, plants are grown and set out in the field. The varieties which they can plant are limited, they are of the dry-flesh type, more woody and not as nutritious as the Southern product. The rich, nutritious and sweet varieties which the South can produce as a field crop cannot be grown at all in the North.

Sweet potatoes in the eight States named are grown as a field crop by inexpensive methods. In Florida we can produce a sweet potato crop in three ways:

1. We can leave some sweet potatoes in the ground through the winter and secure vines for planting from that source in the Spring.
2. We can make a bed of selected sweet potatoes or yams from which to grow plants, and it does not require artificial heat or the large quantities of stable manure required in the North. We can set out those plants in March and secure a very early crop which we call our Spring crop.
3. From the vines of the Spring crop cut into small sections, we produce our main crop, which we harvest in the Fall.

In Florida it is not necessary to heat our sweet potato storage houses except for the first ten days to two weeks; and we can load

cars all winter long without chilling the potatoes; being thus loaded in refrigerator cars, uniced, we can send them to any part of the United States at any time during the winter, and they will arrive sound and in good condition. Being shipped only as the market demands them, they are consumed before deteriorating. That is the condition which exists at Jacksonville, and the parts of the United States in which sweet potatoes can be handled in that way are not many in number or of very large area.

The eight States named, being seaport States have low rates inland for long distances; and movement of their product to the great Northern markets will not be interfered with by the necessary constantly increasing freight rates, nor will the movement be interfered with by car shortage to those markets, for they can always ship by water at low rates.

So it cannot be denied that the eight States named will continue to produce at least four-fifths of the sweet-potatoes and yams, and Florida will continue to be the State among those eight in which they can be most cheaply and profitably produced, if the necessary storage and curing warehouses are provided, and marketing facilities furnished in connection therewith.

"A quantity sufficient for home use can be grown under a wide range of condition, while production on a commercial scale is somewhat restricted by climate and soil, and also by market and transportation facilities."

U. S. Bulletin 324, page 3.

WAREHOUSES FOR CURING AND STORING COME FIRST, THEN INCREASED PRODUCTION

We see much in the newspapers about increased production of sweet potatoes; but we hear nothing at all about curing them so they will keep, or methods of marketing—and they can't be marketed unless they are cured, and graded.

"Again and again the South has demonstrated that production first is a mistake, for the farmers throughout the Southeastern States have gone in for diversification, and actually have produced the stuff, only to run up against this discouraging blank wall of 'No Market.'"

James H. Collins in "Country Gentleman," May 12, 1917.
Also U. S. Department of Agriculture, page 14 of this bulletin.

CENTRAL WAREHOUSE AND SALES SYSTEM THE ONLY SOLUTION

The curing and storing of products like the sweet potato at distributing centers like Jacksonville, and the sale of same through a competent Sales Manager connected with such an institution, enables such a concern to distribute the farmers' product "throughout the consuming period, in such a way as to meet the requirements of the market without overloading, and depressing prices. With vegetable products, such as Irish potatoes, sweet potatoes and squashes, this is a very important consideration; the trade quickly determines the center of supply, and as soon as the markets create a demand the supply can be forthcoming in a regular systematic manner, so as to cause the least

loss to the producer, handler and consumer. Under this system, storage products should never be compelled to beg a market; the demand will always find the supply."

U. S. Year Book, 1912, pages 98-99.

A study of the articles of incorporation of the various so-called marketing and co-operative associations will disclose the fact that the most successful are handled along the lines of the proposed Florida Sweet Potato Products Company. The U. S. Year Book for 1914, on page 26 shows over 14,700 of such organizations were then in existence, and that they handled over one billion dollars worth of agricultural products per annum.

"This country has innumerable examples of success in manufacturing, but where can be found one in which all the thought is given to production, and no attention is given to the distribution and selling of the products?"

"The farmer is himself a manufacturer, but when the manner of selling his products is observed, the conclusion is formed that his marketing methods are not worthy of the name, as they consist chiefly in dumping, rather than of marketing."

U. S. Year Book, 1914, page 186.

"Under the system of independent action, producers are creatures of circumstance, over which they have no control. At harvest time, they have little conception of the competition they will have to meet in the market, unless the crop is so short that it has become a matter of comment."

U. S. Year Book, 1912, page 357.

"It is a matter of record that the largest apple crops in the history of the Nation yielded the producers of these crops a less amount of profit than has been obtained in certain years of less production; and it is also known that in these years of enormous crops, the prices paid by the consumers in most sections have not reflected in a proper degree, the low price paid to the farmers. With this knowledge of the facts, what farmer will be encouraged to grow 'two blades of grass,' when he fails to realize a fair return for the 'one blade,' which he now grows? It cannot be made clear to him that better returns await an increased production until he feels that present production is fairly remunerative."

U. S. Year Book, 1914, page 186.

"It has been stated that farmers as a class are not competent to pack their own products. It is human nature that a man have great pride in that which he produces. He is blind to defects in his own that he may condemn in the product of his neighbor. As a rule farmers have neither the facilities, nor the time to prepare their products for market."

U. S. Year Book, 1914, page 195.

"The problem of economic and efficient marketing * * * is largely a problem of selling by grade rather than by inspection. It is physically impossible to handle goods on so large a scale where they are sold on inspection as where they are sold on grade."

"Wherever there is a highly efficient system of selling anything,

it will be found that there has been developed a system of grading and standardization; that is, the goods are inspected only once and are graded. Thereafter they are bought and sold by grade with no further inspection."

"The farmers are under the same inexorable economic laws as other people, and they will never be able to market their products with the maximum economy until they grade and standardize their own products, so that they can move through the channels of trade toward the consumers without repeated inspections. But this cannot be done without organization."

"The products of a multitude of small farmers can be made uniform as to grading and packing by an organization, and by no other means whatsoever. It is a waste of time and breath even to talk about it on any other basis."

U. S. Year Book, 1914, pages 98 and 99.

We suggest that the warehouse, utilization plant, etc., be operated under the name of the Florida Sweet Potato Products Co., and we will hereinafter refer to it by that name.

The sweet potatoes handled by the Florida Sweet Potato Products Co., will be mature, clean, carefully graded, properly packed and labelled; a good keeping good-shipping attractive commodity. They can be sold in just the grades and quantities best suited to the dealer's trade, and handled with a minimum of loss. They can be shipped regardless of weather conditions in any quantity. In car lots they can be diverted from point to point, like any staple product, to take advantage of market conditions. They will be sold according to grade, and not by inspection. The grade, together with the name of the Products Co. will be stamped on each package; that stamp will serve the same purpose in the produce trade as the stamp on a coin to the world at large; both stamps indicate a standard, they serve no other purpose; in the one case that standard is backed by an established government, and in the other by a company with a strong commercial rating.

The sweet potatoes handled by the Florida Sweet Potato Products Company will be properly prepared for the channels of trade. They will be graded to satisfy the varying tastes and needs of the rich and poor alike; to meet the requirements of the hotels from the finest in the land to the cheapest boarding house; the manufacturer of pies and pastries will not be disappointed, and the manufacturer of pie-fillers will be pleased. They will all be sound sweet potatoes and yams, not varying materially when it comes to real food value, but there will be a considerable difference in the price of the different grades. *See pages 13 and 14 of this bulletin as to sales methods.*

THE FARMERS' DIFFICULTIES

Sweet potatoes offered to the trade by the farmer are a perishable product, of all sizes, varieties, grades, and a varying degree of maturity and cleanliness, which must be quickly sold. They must be inspected and rehandled each time they are sold in trade channels. Their movement from one point to another is very limited, as to time and distance. They cannot be called out from the farmers' storehouse—the outdoor

banks—to meet a bare market and high prices, except under favorable weather conditions, for the reason that the farmer cannot open his outdoor banks during cold weather, or rainy and wet seasons, which prevail from time to time during the winter months.

"Growers who do not have suitable storage facilities are compelled to sell their sweet potatoes for a low price at digging time, while comparatively high prices prevail during the remainder of the season."

U. S. Bulletin 520, page 5.

Last Fall, when sweet potatoes should be plentiful in Jacksonville, and were being offered by the farmers to whoever would buy at 75 cents and less per bushel for sound potatoes, the produce firm of A. F. Dechman & Co., of this city, being unable to obtain Southern sweet potatoes properly prepared for market bought from the producers in Eastern Virginia 1,500 bushels of "kiln dried" Big Stem Jerseys. They kept them thirty days, and in a market which prefers a moist sweet potato, this firm obtained 25 cents more a bushel from the retail dealer, than the farmer was asking the consumer—the farmers' product was not prepared for trade channels. And that took place in what should be the best sweet potato producing section of the United States, where over 2,250,000 bushels of sweet potatoes were produced within a reasonable shipping distance of Jacksonville.

Shipments to Northern, Northwestern and Western points during the period of intense cold, could not be made by the farmer, for he lacks the experience and special knowledge required.

"Sweet potatoes, shipped during the winter must be protected from cold. When a sweet potato becomes chilled, its quality is impaired and decay sets in."

U. S. Bulletin 548, page 14.

They are protected from cold by lining the crates with paper, and shipping in uniced refrigerator cars, with just sufficient ventilation to prevent their heating.

The Farmer Must Be Educated to Handle Properly

Sweet potatoes, to keep well, should be dug with care, and carefully placed in field boxes or hampers, loaded on spring wagons and loaded with care in cars for shipment to the warehouse. The broken and bruised potatoes should be sorted out in the field and either fed to stock, or shipped separately as culls to be manufactured into one of the by-products. They should not be dug in cold weather, for chilled potatoes do not keep well.

Some one must educate the farmer in proper methods of handling, unless that work is performed by an organization of this kind, he will remain uneducated in an important part of the sweet potato industry.

TOTAL PRODUCTION TRIBUTARY TO JACKSONVILLE

Some one said that he was afraid that the Jacksonville market would be flooded with sweet potatoes and the price obtained be unprofitable. With a plant to take care of the culls and surplus above market requirements, with the great markets of the Northwest and West unsupplied and North asking for our product a competent, energetic Sales Manager will have no difficulty in selling all that can be cured and standardized.

However, to satisfy this man, some investigation and consideration was given to the matter. From the standpoint of production, the Jacksonville territory would cover the region within which sweet potatoes could be delivered at the warehouse of the Products Co., in wagons, or in carlots, for a reasonable cost of hauling or freight rates, and arrive at destination before beginning to decay.

The total Florida crop is about 2,500,000 bushels, and the total Georgia crop is 6,715,000 bushels. On the high estimate that 40% of the Florida crop, and 15% of the Georgia crop is within Jacksonville producing territory, we have a total of 2,072,500 bushels. The question as to the distribution of that total is taken up under the next heading.

Distribution of the Crop

There is no published data on the distribution of the total estimated above. The various factors entering into the distribution are given below, and percentages are extended opposite to same. It is not claimed that these percentages are absolutely correct, but from the best information we have, we believe they are not far from right.

SPRING CROP..... 11%

The Spring crop is consumed before November 1st, on farms and nearby markets.

FALL CROP—

(a) Used on farms as food, and varieties suitable only for stock feed, fed to hogs and cattle.....25%

(b) Lost by decay in outdoor earth-banks.....15%
It is estimated that one-half of the crop thus stored is lost by decay. This estimate is made on the basis that 30% of the total production will be stored in outdoor earth-banks.

(c) Sold before December 1st, by farmers in nearby towns and communities. Being uncured and perishable the product is soon consumed 15%

(d) Sold before January 15th, by farmers in nearby towns and communities, for local consumption. These are the sound sweet potatoes removed from outdoor earth-banks, and separated by the farmer from those which have decayed.....7%

(e) Available after December 1st for marketing through Jacksonville and "points beyond" exclusive of amount stored or manufactured by Sweet Potato Products Co.....9%

(f) The Sweet Potato Products Company will have a capacity for curing, storing, grading, packing and properly preparing for market the first year, and selling same for the farmer, or manufacturing into by-products of.....18%

TOTAL FALL CROP..... 89%

100%

Available Market Supply in Jacksonville Territory

Items "e" and "f" above would represent the available market supply in Jacksonville territory, or 186,000 and 373,000 bushels respectively; a total of 559,000 bushels.

The item "e" will be disposed of as usual through peddling, hucksters, small retailers and a small amount by produce men. It would constitute about one-third of the available supply.

The item "f" would be handled by the Products Co., and would constitute about two-thirds of the available supply. A total of 373,000 bushels of sweet potatoes, or 124,000 barrels the first year. Considering the local market, some Southern markets, the East Coast of Florida, the Northern, Northwestern and Western markets, that seems a small business even for the first year, and surely nothing to be frightened about. It is probable that a larger amount would be necessary to meet the requirements of the Products Co. and if so it would either call out stocks in the territory designated in the above table as used for other purposes, or go into other sections for its supply.

MARKETS

Improvement of storage methods, with suitable varieties and adequate transportation, should put the sweet potato on as stable a basis as the Irish potato crop of the North."

U. S. Bureau of Markets, Bulletin 98, page 164.

The daily consumption in Jacksonville is about 450 bushels per day, and a considerable percentage is shipped here from Virginia and sold to Jacksonville consumers at from 25c to 50c more than the farmer asks for his potatoes; the Virginia product is properly cured, graded and packed, and the loss to trade is small; those conditions are not true as to Southern products.

The Southern market being well understood; we will divide the other markets into two heads—Northern Markets and Northwestern Markets.

Northwestern Markets

We include under this head the Chicago market, and nearby States, and the markets of the West and Northwest.

"A great opportunity is afforded the farmers of this region (the South) to develop the sweet potato industry depending upon the Rocky Mountains and Great Plains area for a market."

U. S. Bulletin 520, page 5.

Mr. A. F. Dechman who has operated in the West and Northwest states that there is a great opportunity in that region; that in the Fall he has seen sweet potatoes sell in Denver, Colorado, for ten cents a pound; and that in his opinion, if a Florida crop is shipped thirty days ahead of the Texas crop it will sell at high prices as far west as Portland, Oregon.

The Chicago market was developed to a considerable extent by cooking demonstrations held in the large department stores of that city, showing the Southern methods of preparing its sweet potato. So successful were the methods pursued that during the years 1915 and 1916 it was the Nancy Halls from Mississippi that brought the highest price paid for sweet potatoes sold in the Chicago market.

Northern Markets

It is believed that when the markets of Pennsylvania, New York, and New England have learned the Southern methods of cooking and preparing their moist sweet potato that they will prefer it to the dry product they now obtain from New Jersey, Delaware, Maryland and the eastern shore of Virginia. And it is believed that even at this time, there would be no difficulty in disposing of the entire surplus of our best yams and sweet potatoes produced in Jacksonville territory, in those markets, in competition with the dry potato, if that was thought advisable, for, as shown by the statements under the heading the "Moist Sweet Potato Bug-a-Boo," there is, even at this time an unsupplied demand for our product.

As to the Spring crop, which is grown from plants or "draws," partly for the purpose of securing vines to use in planting the larger fall crop, when properly prepared for market the Southern sweet potato brings high prices in those markets now. The Agricultural Department states that during July, August and early September, sweet potatoes sell as high as $4.50 and $5. per barrel, and that in 1911 they sold as high as $7. a barrel. That was for properly graded stock; the usual shipments of improperly prepared Southern stocks sold very low, just as should be expected.

The Moist Sweet Potato Bug-a-Boo

Whenever the question of selling the Southern sweet potato in Pennsylvania, New York and the New England markets is raised, some one immediately objects that the Southern grown product being more moist and not as dry as the sweet potatoes sent from New Jersey, Delaware, Maryland and the eastern shore of Virginia, the Northern markets will not take it.

The answer to that objection may be summed up by saying that wherever the North has learned the Southern method of cooking the moist or semi-moist sweet potato, they prefer it; but that under present conditions they are unable to procure it regularly.

As the sweet potato industry extended southward from New Jersey into Virginia, instead of attempting to push the sale of the moist product of Virginia, the growers accepted the market conditions as they found them; followed the point of least resistance and raised the dry kind for sale in the Nothern markets, and kept the more desirable moist kind for home consumption.

All that is necessary to make a market for our Southern product is to follow the same course pursued in the Chicago market, to supplement it with a little advertising; and in each crate of sweet potatoes to place printed recipes for cooking and serving same. Working along

that line, the market will keep ahead of the standardized supply of Southern cured sweet potatoes.

One objection to the Nancy Hall and the dry sweet potato such as the Yellow Jerseys, Big Stem Jerseys and Early Carolinas, from the producers' standpoint is that they are particularly susceptible to stem rot, whereas most of the other commercial varieties are more or less resistant.

New York Hotel Chefs Prefer the Southern Yam

Mr. Harry Snowden Stabler, in an article in the *Country Gentleman,* in February, 1917, on the Southern sweet potato and yam, in which he criticised the South for not curing, warehousing and grading this crop for Northern markets, said, in substance: From a carload of Southern grown yams, he sent a small quantity to a Chef of one of the leading New York hotels, and asked him to try them out in the kitchen. The Chef cooked them and reported, in substance, that he found them of a rich, creamy consistency, sweeter and for superior to the more woody sweet potato raised in New Jersey; that the guests showed a preference for them; and that if he could be assured of a steady supply of properly cured and graded Southern grown yams and sweet potatoes, he would use them regularly, and in considerable quantities. He immediately ordered six barrels out of that car.

Mr. James H. Collins, a special writer, with a wide range of agricultural information and markets, whose very interesting articles appear frequently in the *Country Gentleman"* and other leading publications, in a conversation with Mr. Spencer, in the latter part of April, 1917, stated, in substance, that some time ago he sent a dollar to a farmer in Arkansas, with a request that he send him, express prepaid Arkansas yams to that amount. Mr. Collins received in due course something over a peck of yams, which he sent to the Chef of another high-class New York Hotel, with the request that he try them out in the kitchen. The kitchen test was so satisfactory that the chef immediately wired the Arkansas farmer offering to buy all he had; he received twelve barrels, but was unable thereafter to secure a regular supply of proper grades and varieties, and had to give up their use.

New York Produce Men Unable to Obtain Southern Yams

Mr. Collins also stated that last Fall he was requested by a large produce merchant in New York to put him in touch with a party in the South who could make regular shipments of properly cured sweet potatoes but that he was unable to supply the desired information. Some time later his friend stopped him on the street, and seemed highly elated because he had finally located a man way down South, who could supply him with properly cured and standardized yams—but he could not get enough for all his requirements.

It is said by experienced produce men of this city, who should know that there is no reason whatever why our best yams like Porto Rican and similar varieties cannot be marketed in New York and New England markets, if prepared and sold in the manner proposed by the Sweet Potato Warehouse Company which will be formed here.

SALES METHODS

The Sweet Potato Products Company will be partly a marketing concern for its stored vegetables and other vegetables shipped to it, and will also be a manufacturing concern for the purpose of utilizing the culls and surplus of the sweet potato and other crops.

The sales made by the company, whether they are of vegetables, or of manufactured products will be confined exclusively to the jobbers and wholesalers, in just the same way that any successful manufacturer of food products sells his product through that trade channel. Under no circumstances with the company sell to retailers, peddlers or consumers.

A Peculiar Situation

In Georgia, North Carolina, and South Carolina, a few wide-awake merchants have erected medium sized sweet potato warehouses, for curing and storing. In the Fall, they buy the farmers' sweet potatoes and yams at 35 to 40 cents a bushel; they store them until Spring and sell identically the same sweet potatoes and yams back to the same farmers for 75 cents a bushel.

In Jacksonville, we do it differently. The local merchant not finding home grown sweet potatoes which have been properly cured and graded, sends North for those dry Big Stem Jersey sweet potatoes, and sells them to Floridians who prefer the moist sweet potato like the Porto Rican yam; and he charges them from 25 to 50 cents more per bushel than the farmer asks for his product. No Jacksonville merchant thought of putting up a warehouse, in which to store them.

26,000,000 bushels of sweet potatoes were raised in the States of Florida, Georgia, South Carolina, North Carolina, and Alabama, in 1914, or nearly one-half of the total produced in the United States. Jacksonville is quite close to the center of that area, and she sends North for dry sweet potatoes, when her people much prefer the moist yam.

The Milk in the Cocoanut

We expect to see a statement published soon that the Jacksonville merchant sells those dry sweet potatoes because his trade prefers them, just as we see the often-repeated statement that the North will not take our moist product.

The truth about the whole matter is that the Northern house wife as well as the Floridian is taking what her dealer offers; and neither the Northern merchant or the Jacksonville merchant is willing to take the chance of heavy losses on the perishable, uncured, ungraded, moist sweet potato and yam which the Southern farmer offers to sell him. Your merchant, therefore, buys the dry Big Stem Jerseys, of the "nigger-choker" type, which we raise down here exclusively for stock feed; and that is the "milk in the cocoanut" of the "moist sweet potato bug-a-boo" above referred to.

It was not many years ago that we had a "moist bug-a-boo" in the cigar trade—the experts said it was absolutely impossible to manufacture a high-grade cigar on the main-land of Florida. The Key West cigars sold better and brought a higher price, and these experts claimed the cigar trade never would sell a high-priced Tampa cigar—that is all changed now.

Dumping vs. Selling

The total production of sweet potatoes for the United States is only one-third of the apple crop. The apple is more or less of a luxury, but the sweet potato is a staple food product. When times are hard its food value is such that it is the only food of many a Southern darkey and poor white; whole islands in the Pacific live on this alone at certain seasons (*U. S. Bulletin 324, page 3*). That is a condition that does not exist anywhere as to either the apple or even the Irish potato.

The apple crop is *marketed,* while the surplus Southern sweet potato crop is either *"dumped"* or permitted to decay.

We submit that the problem is not a question of production, that it is not a question of markets, but that it is a question of conservation in proper warehouses, salesmanship, advertising and the utilization of the by-products.

THE ADVANTAGE OF THE LARGE WAREHOUSE OVER THE SMALL ONE

Every farmer should have on his farm a sweet potato warehouse, within which to cure and store so much of his crop as is needed for his own use. Such warehouses are described in Farmers' Bulletins Nos. 520 and 548. If, however, he does not ship his surplus to a central warehouse in Jacksonville, he will not receive as large a price for his product, nor will he receive any money until it is sold, for he will have no warehouse receipt on which he may borrow.

The comparison here made between the large warehouse refers to the difference between a large central warehouse at Jacksonville (such as The Florida Sweet Potato Products Company, connected with which is a strong competent and efficient selling organization) and several smaller ones at various shipping points throughout the State.

More Uniform Heat and Ventilation With Less Loss

The large warehouse being carefully constructed by experts, and being heated and ventilated by modern systems of heating and ventilation, a more even temperature can be maintained in a large warehouse than in a small one; the percentage of loss will be lower, and the cost of heating and ventilation less. The warehouse being in constant need of attention to meet the changes in weather conditions, this item alone in the smaller warehouses, would be a material item; and neglect would result in the depreciation of the stored product.

Loans

The large warehouse, because of its modern equipment, business organization and financial standing can be bonded, and its warehouse receipts accepted by financial institutions as the basis for loans up to 60% of the warehoused product. It is doubtful if any loans at all could be secured on the receipts of the smaller warehouses.

Fire Protection

The large warehouse being equipped with modern fire protection, and being in a city with modern fire department, not only is danger of loss by fire reduced to a minimum, but the insurance on warehouse and contents being covered by a blanket policy, the insurance cost will be lower.

Theft

The loss by theft in smaller warehouses may be a serious matter, which is entirely avoided in the bonded warehouse.

Overhead Expenses Less

Overhead expenses of all kinds are lower in the large warehouse, by reason of modern equipment for handling, conveying, loading, grading and packing; the cost of materials is reduced because purchased in large quantities, and the cost of crates is reduced by box-nailing machines, etc.

Greater Net Income

Racks for drying must be constructed for the full capacity of the small warehouse, which not only increases cost of handling, but makes the use of the warehouse for other storage impossible, after the sweet potato season has passed, and thus cuts down the revenue of the warehouse. In the large warehouse the sweet potatoes being stored after curing in crates, piled so as to secure ventilation, only a small number of racks is required, the cost of handling is reduced, and the warehouse may be used for other purposes after the sweet potato crop is out of the way.

Lower Losses

In warehouses for storing vegetables, especially a warehouse which must be maintained at the temperature necessary for sweet potatoes, there is an increasing danger from year to year of destructive plant diseases resulting in loss by decay of the stored product. A large warehouse having fewer drying racks, and the floors and walls for the greater part being unobstructed, all germs and spores of plant diseases, will be killed after the storage season is over by spraying of walls, floors and ceilings with proper fungicides. This would be difficult of accomplishment in the smaller warehouses; it would probably not be done at all, and the farmer might easily find that in the end his stored product has been either greatly injured, or entirely destroyed in the small local warehouse. This is, furthermore, a matter which would be seriously considered by a bank in loaning on warehouse receipts, and will have a material effect on the amount which can be borrowed on warehouse receipts of this kind.

Sales Department

A large warehouse company could by employing a competent Sales Manager, sell the farmers' product stored with it, on commission, and by reason of having control of the greater part of the product produced in the territory, could stabilize prices and insure a highly profitable return to the farmer; as well as materially increase the amount which the farmer could borrow on his warehouse certificates. Being located

in the most important distributing center in the Southeast, the Jacksonville warehouse will be able to quickly take advantage of market conditions, and will effect a material saving on freight rates. Numerous small warehouses acting independently would break down the market and decrease the amount which the farmer could borrow on his warehouse receipts, provided he was able to borrow at all.

Grading and Packing

The grades and packs established by a large warehouse company will have a standing in the produce markets which the small warehouse can never expect to attain.

Will Stabilize Prices

By marketing through a large central organization of this kind prices can be easily maintained; while sales through numerous independent warehouses acting independently invariably breaks down the market.

Settlement of Claims

The large concern with its modern business organization can quickly handle and settle freight claims, as well as claims by customers arising from defects in packing, etc., which are constantly arising in a business of this kind.

Utilization of Culls

The sweet potatoes being shipped to the warehouse in field boxes will be graded by the warehouse company, and in such grading a considerable percentage will be thrown out as culls. These culls would be a loss to the farmer or smaller warehouses, but the large concern being able to manufacture them into one or more of the seven by-products of the sweet potato, could pay the farmer a fair price for same; and still leave the warehouse company a good profit on its manufacturing enterprise.

Seed Sweet Potatoes and Plants

The large concern can either grow, or contract for the growing of an ample supply of sweet potato plants of the proper varieties, best suited to the markets to be supplied, and after making a small profit on the transaction, effect a saving to the farmer. By carefully inspecting the seed potatoes from which such plants are grown, the large concern would prevent losses from disease, if any, which might otherwise arise. If the farmer preferred to grow his own plants, the company would select from its stored stock of sweet potatoes the very best for seed.

Field Department

During the Spring and Summer season the large concern, through its Field Department, will be able to go out among the farmers and secure the planting of the proper varieties and acreage to meet market requirements, and thus build up the sweet potato industry.

Other Benefits

The service which the large concern could render the farmer, without cost to him, as an information bureau, as to market and crop

conditions of crops in this and other parts of the United States, which is an important matter in deciding upon the kind and acreage of crops to be planted; as well as in utilizing the surplus of the sweet potato and other crops in its manufacturing department, after the profitable shipping season for such crops has passed, would not only be of inestimable value to the farmer, but would rapidly build up the agricultural industry within a reasonable shipping distance of the warehouse.

Being in close touch with the great markets, it will be able to give valuable advance information to the farmer as to the most profitable crops to plant each winter.

The Company would thus render a service to the farmer and to this territory, which could not well be furnished in any other way.

THE AGRICULTURAL SITUATION IN DUVAL COUNTY

Duval County has about ten per cent. of the population of the great State of Florida, and it has a much greater percentage of its wealth and capital.

With artesian water for irrigation; with a soil well adapted to the cheap surface irrigation used for centuries in various parts of the world, and for many years in our Western irrigation district with wonderful results; with soils of unusual fertility; with waterways affording excellent drainage outlets; with the finest transportation facilities on the Atlantic Coast south of the James River; with the largest city in Florida as its county seat and the distributing center of food and other supplies for Florida and parts of other Southeastern States, including the winter hotel trade of the East Coast; it should be the greatest agricultural producing territory south of Norfolk, and yet, within the entire county, it has not one community or shipping station that produces any agricultural product in carlots.

The lands within a radius of ten miles around Jacksonville, except as to a very few tracts, must be devoted to truck crops and general farming. Being cut up into small tracts of five, ten, twenty, forty, and a comparatively few eighty, 100 and 200-acre tracts, the farms are too small in size for stock raising, except in connection with general farm operations.

Did you ever take a map of Duval County, and mark upon it these small ownerships, by hundreds of persons in all parts of the Nation, very few of whom reside upon the land? How many large or medium sized stock farms can be located west of Jacksonville south of Trout Creek and east of Whitehouse?

Provide a money crop, like sweet potatoes, and a large percentage of those land owners will do one of two things—they will either farm the land themselves, or hunt up some one who will, and sell it to them —at a profit. With a money crop, every owner will be a farmer, or active in securing the cultivation of the land he owns; without a money crop, many become "knockers."

In the annual production of truck crops on the Atlantic Coast, between Norfolk and Savannah, which the Agricultural Department states amounts to over $15,000,000 annually; and with vast areas

planted to truck crops south of Jacksonville, from which more than 70,000 cars are shipped out of Florida each year, Duval County does not produce so much as one carload at any one point, and the Jacksonville producing territory is unknown in the great markets.

We can produce all the crops any other Florida point can produce north of the Manatee, and we can market any of them within ten days of the time they can market them, and as to some of them, can market just as early as any Florida point. Our freight rates are less—in fact the saving on freight rates for every acre of cabbage grown 20 miles south of Jacksonville amounts to $75. an acre each year.

Very little thought will convince any man that the proposed warehouse, with its manufacturing plant and competent sales force will put Duval County on a carload basis the first year, and that she will grow rapidly thereafter.

The carlot-producing territory of Hastings, Florida, is known the country over for its early Irish potatoes. That crop, however, must be marketed quickly, and it is subject to a wide range of prices; and with its continued growth in one locality, there is an annual increase in plant diseases and insect enemies, which affect production and profits. That condition does not exist as to sweet potatoes.

We ought to make Duval County, and Jacksonville known as the sweet potato center of the South, and it can be done by the proposed warehouse with its efficient selling organization.

The Hastings section had over 11,000 acres in Irish potatoes this year and will ship over 3,000 cars, valued at $4,000,000. The photograph below was taken at Hastings April 26, 1917.

In the produce trade of the Nation, the carload is the standard unit of today—it seldom thinks in other terms; while grandmother's basket and the farm-wagon are the marketing units of yesterday

CARLOT PRODUCTION IS THE FOUNDATION OF SUCCESSFUL AGRICULTURE IN DUVAL COUNTY

"The carlot is the modern unit in farm-marketing * * * and the farmers' wagon of today. The little odd shipments sent in by farmers nearby, for sale on commission, still figure heavily in number. But standard stuff in carlots has made them poor merchandise."

"Some months ago, I walked through a farmers' market in a Southern City. It was an old institution, on land left years ago as a legacy. There were plenty of real farmers there with loaded wagons. But their stuff was of poor quality, according to produce trade standards, haphazard in both growth and grading" .

"Inquiry showed that most of them came from a poor mountain section 'back beyond,' and that some had spent a couple of days getting to market, and would be as long getting home again. Round that very city however, is rich valley land tilled by prosperous farmers. None of them are seen in the market, however, nor are their products, for they all raise high-class stuff and ship to the big cities in carlots."

"Find any farming section in the United States that is making money steadily out of fruit, vegetables, poultry, dairy products and the trimmings of agriculture generally, and you will find a place that has learned to grow high-class stuff and send it to market long distances in freight carloads at the lowest carload rates."

"The big, famous carlot producing sections are almost always prosperous communities where farming has been carried to high standards, for back of the carlot must be the latest science in grading, packing and selling."

James H. Collins, in "The Country Gentleman," May 22nd, 1915.

The Southern city described by Mr. Collins might well be Jacksonville, except that we are not yet on a carload basis in any part of the county.

We have in Florida many examples of prosperous carlot producing sections, and their number is increasing yearly.

Carlots are frequently sold while in transit before reaching destination; and they are diverted to destinations other than the one first named in the bill-of-lading. This cannot be done in less than carload shipments.

"Important instances of this practice of diverting a consignment en route are afforded in the movement of fruits and vegetables from Southern States. A commission firm, whose head office is in Pittsburgh, Pa., distributes its marketings in this way. On receipt of a telegram, say, from a Georgia shipper, announcing that he has a car ready to move, the head of this firm decides at once on the general direction for the car to go. If the West promises the best markets for the next several days, the shipper may be notified to consign to Cincinnati, or if the car is to go to an Eastern city, the consignment may be made to Potomac Yard, a freight transfer point on the Potomac River opposite Washington, D. C. At each of these diversion points a representative of the commission firm opens the car, inspects the contents, and reports the results by telegraph or telephone to the Pittsburgh office, which is kept informed of market conditions in different cities. The agent at the diversion point will then receive orders as to the final destination of the car."

U. S. Bureau of Markets No. 98, page 17.

SEE PAGES 7 & 8
OF BULLETIN

The Southern Field

Issued from the office of the Southern Railway System Development Service, Washington, D. C.
M. V. RICHARDS, Commissioner
H. E. WAERNICKE, Assistant Commissioner

THE SOUTHERN FIELD is published in the interest of the territory in Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, Southern Illinois and Southern Indiana, reached by the lines of the Southern Railway System, Southern Railway in Mississippi, Mobile & Ohio Railroad, and Georgia Southern & Florida Railway.

The services of the Southern Railway System Development Service are at the command of all who seek a location in this section.

WASHINGTON, D. C., MAY, 1917

New Use for Yams

Greenville, S. C., has a factory making nuts, puddings and flakes from the Southern yam. The nuts and flakes appear much like the average light breakfast foods now on the market. The pudding is turned out in grains the size of sugar, and is turned into pudding for the table according to instructions given. The company operating the factory has now only a small plant, but it has organized with a capital of $250,000 and the construction of a new plant to have a capacity of 1,000 bushels a day will soon begin. It has been paying 70 to 85 cents a bushel for potatoes, and has contracted for a large supply after March 1 at $1 a bushel.

Clipping from the Southern Field.

A similar plant in connection with a sweet potato curing and storage warehouse is proposed for Jacksonville.

May 19 1917 *Five Cents the Copy*

The COUNTRY GENTLEMAN

The OLDEST AGRICULTURAL JOURNAL *in the* WORLD

The 1917 food crisis is the greatest in the history of the world.

The vast majority of our people refuse to realize the emergency. They express alarm over rising prices, yet assume that the first peace move will bring relief.

IT WILL NOT.

Sixty million workers have been withdrawn from normal production in Europe.

Reserve stocks of meat, grain, butter, eggs, canned food have been steadily sagging below the danger level.

Europe has bought for future delivery 300,000,000 bushels of 1917 wheat. Unless Federal regulation intervenes wheat may sell at $3.00 or even $4.00 a bushel.

It is up to the American Farmer to stave off a graver calamity than any that has so far attended the World War.

Extracts from the first of a series of articles beginning in this number, entitled

FEEDING *the* WORLD

by Barton W. Currie

The CURTIS PUBLISHING COMPANY *Philadelphia*

The Nation is not going to starve, but foodstuffs like corn, wheat, canned goods, etc., which can be exported, and stored for long periods, without deterioration, will be shipped abroad in such quantities as to make a deficiency of those foodstuffs in this country—a deficiency that must be supplied by other food products.

"It has been plain for some time that the canning industry was suffering on account of inadequate supplies of raw material. While there is pig-tin in this country, if there were a slight interruption in the supply, the result would be very serious. Sink one ship with 1,200 to 1,400 tons of tin, and it will be well-nigh impossible to overcome the condition created."—*Frank E. Gorrell, Sec'y National Canners' Association.* Pig-tin is imported.

Today we do not feel the pinch, because we must keep our foodstuffs for want of ships to move them; tomorrow a vast fleet of new ships will make a different situation.

Under those conditions, we will consume more vegetables. The sweet potato is second only to the Irish potato as a vegetable crop; properly cured they keep for months and stand long-distance-railroad shipment well.

The U. S. May Crop Report shows that the farm-price of sweet potatoes in April was $1.24 and in May $1.41—that price means cured, standardized sweet potatoes.

The time seems opportune to establish the sweet potato industry in Duval County.

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THE CHEAPEST CARRIER OF FARM PRODUCTS. ONE OF MANY STEAMSHIPS BETWEEN JACKSONVILLE AND THE NORTH

The five States of Florida, Georgia, South Carolina, North Carolina, and Alabama produce about one-half of all the sweet potatoes annually produced in the United States.

Jacksonville is the nearest seaport to the center of that great sweet potato industry.

About one-third of the total production in these States is annually lost by decay in make-shift, outdoor earth-banks.

Jacksonville can save all the sweet potatoes available for market within a reasonable shipping distance this year, by the methods outlined in this bulletin—and make money doing it.

THE PORT OF JACKSONVILLE HAS LOW FREIGHT RATES FOR LONG DISTANCES INLAND